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published in
Social Epistemology
2008

DOI (link to publisher)
10.1080/02691720701773577

Social Epistemology
Vol. 22, No. 1, January–March 2008, pp. 97–117

Routledge
Taylor & Francis Group

Possibilities of Democratisation in Organisations

Han van Diest

In the reflection on organisations there is a tradition that focuses on the dimensions of power within organisations. Generally in that tradition, organisations are interpreted as complex unities of individuals and coalitions who try to influence the functioning of organisations with a view to their values and interests. This tradition presents itself in opposition to mainstream thinking about organisations in which they are interpreted as technical systems for making profits through efficient ways of production. This dichotomy of tradition reflects more or less Habermas's dichotomy of communicative and instrumental reason. In this article I develop a perspective that goes beyond this dichotomy. I try to show by means of a critical analysis of organisations from a "technological" perspective that organisations are necessarily open to democratic actions. This can be considered as an unforeseen application or example of the Habermasian communicative reason.

Keywords: Democratisation; Technology; Feenberg; Underdetermination; Organisation; Politics; Action; Design; Choices; Critical theory; Ontology

Introduction

The present article addresses a major topic in critical thinking, as found, for instance, in Marx, Marcuse and, recently, Feenberg: technology and its role in society. It is readily noticed that in the mainstream theories of management and organisations, enterprises are represented as technically and politically "neutral" instruments for realising profit. The critical tradition just mentioned evidences the presence of political elements. For instance, socially vested interests are projected in commercial

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ISSN 0269–1728 (print)/ISSN 1464–5297 (online)
DOI: 10.1080/02691720701773577

organisations in such a way that they are masked or "rationalised". Unmasking is an important topic within this tradition. In general, these approaches are anti-capitalistic. They are rooted in a thorough understanding of the mechanisms of capitalism and its vehicles, such as commercial organisations. This is especially the case with the Frankfurt School (Horkheimer, Adorno, Marcuse; see Slater 1977).

The strength of these writers pertains mostly to their diagnostics. But, as a consequence of their radically anti-capitalistic attitude, there seem to be no workable solutions that are not a kind of accommodation with the "real" presence of capitalism. The only "solution" seems to be a total or massive revolution of the capitalistic system (Slater 1977).

In my opinion, there are arguments to contest this dilemma. This article elaborates one of these arguments. For me, there is no evidence of a necessary link between critical analysis, on the one hand, and looking for real possibilities for change within capitalistic systems, on the other. Being critical implies (for instance) that you permanently scrutinise the possibility of becoming a victim of that accommodation.

In this article I aim to demonstrate that the possibilities for democratic action by employees are as extensive as the degree to which an organisation can be considered an instrument (i.e. as the result of instrumental reasoning). Also, I will argue that in "modern", so-called "knowledge-intensive", organisations, employees have more opportunities for democratic action than in more traditional organisations.

At first sight, perhaps, this seems to be a strange position: technological reason implies possibilities for non-instrumental, democratic actions. However, this strangeness diminishes when we consider social constructivist views of science and technology (Knorr-Cetina 1995; Latour 1987; Latour and Woolgar 1986). But, in that case, does technology or technological reason then not disappear? That is not a consequence I accept.

What is technological reasoning? I define this reasoning as that abstract form of reasoning by which mankind expresses its power over nature. In practice this involves combining nature's forces in an original way so as to result in a new procedure or design (Coolen 1992; Hollak 1968). This reasoning is "abstract" because it is not restricted to the situation in which it was needed and applied. It is intended as universal, univocal and objective; it can be applied anywhere and by anyone. Technological systems are defined as the abstract results of application of technological reasoning. The word "technique" refers to concrete technical products or to the concrete production of them.

I use the concept of "underdetermination of concrete technical designs by technological principles" to make clear how technological reasoning can be seen as being open to democratic action *without* losing the technological aspect as such. I take the meaning of the concept "democratisation" rather broadly: the opening up and maintaining of permanent possibilities of intervening and contesting conditions of life for human beings by these human beings themselves (compare Feenberg 2002, 22, 31–32, 158, 159). In this sense, I consider democratisation as a social or common good. As such, this good has nothing to do with a normative evaluation of concrete results of processes of democratisation.

Philosophy of Technology and Critical Theory

In a way, the present article can be considered a critical study of organisation. As such it can be categorised within the group of publications under the label of critical management studies (CMS):

> [CMS] … is a loose but rapidly growing grouping of politically left wing and theoretically innovative approaches to management, business and organisation. It encompasses a wide range of perspectives that are critical of traditional theories of management.[1]

CMS began with Mats Alvesson and Hugh Willmott's edited collection *Critical Management Studies* (Alvesson and Willmott 1992). CMS initially brought together critical theory and post-structuralist writings.

However, CMS seems to have a particular view of critical theory. In my opinion, as far as CMS positions itself in the tradition of critical theory, it is closer to Habermas than to critical theory taken in a more general sense. I will discuss this point later on. That technological systems are not neutral is an important topic of critical theory, or more specifically of the Frankfurt School. Two important representatives of this school, Adorno and Horkheimer, argue that technological reason and technology in themselves are forms of domination. Controlling things or people violates and suppresses their integrity and destroys them (Adorno and Horkheimer 1972). In the end, this position – which is, in this context, comparable with those of Heidegger (1977) and Ellul (1964) – results in a total retreat from the technical sphere into art, religion or nature (Feenberg 1996).

This is not the position of Marcuse. He does claim that inner and outer nature is suppressed by technological reason and/or the products of this reasoning. He refers to the assembly line as an example of oppression (Marcuse 1964). His aim is not to challenge any technological application, but to question the epochal structure of technological reasoning of which the assembly line is a product. In general, he claims that there can be forms of technological reasoning other than that produced by a capitalistic society. So, he does not dismiss all technological reason as such, but proposes a change in the very nature of technological reasoning. This reason would be fundamentally modified by the abolition of the capitalistic society.

Accordingly, for Marcuse, technology is not neutral. For him this neutrality is a kind of ideological illusion. Technical principles can be formulated in abstraction from any interest or ideology. But, as soon as they enter reality, they take on a social or political content (Marcuse 1964, 1968). Feenberg illustrates this idea of Marcuse as follows:

> Efficiency, to take a particular important example [of a technological principle], is defined formally as the ratio of inputs and outputs. This definition would apply in a communist or a capitalist society, or even in an Amazonian tribe. It seems, therefore, that efficiency transcends the particularity of the social. However, concretely, when one actually gets down to the business of applying the notion of efficiency, one must decide what kinds of things are possible inputs and output, who can offer them and acquire them and on what terms, what counts as waste and hazards, and so on. These are all socially specific, and so, therefore is the concept of efficiency in an actual application. As a general rule, formally rational systems must be practically contextualized to be used at all. (Feenberg 1996, 5)

In this perspective, Feenberg agrees with Marcuse. For him too, reform of technology is necessary.

> Reform of technology is the concern of an approach which I call design critique. Design critique holds that social interests or cultural values influence the realization of technological principles. … This approach promises a radically different technical future based on different designs embodying a different spirit. (Feenberg 1996, 2)

This is in contrast with Habermas's view of technology. Habermas accepts a proper sphere of technological reasoning. As is argued by the anthropologist Gehlen, technological development supplements the "natural" shortcomings of the human body and mind with devices. This development is "a project of the human species *as a whole*" (Habermas 1970, 87). That is why this technological reason is neutral according to Habermas: it represents a species-wide interest that ignores the diversity of every subgroup of the human species. For Habermas, Marcuse is the victim of a secret hope that is shared among the members of the Frankfurt School (Benjamin, Horkheimer, Adorno, Bloch). That hope consists of an ideal of restoration of the harmony of man and nature. To realise this ideal, a totally new kind of science and technology would be needed. For Habermas this idea of a radically new science is a romantic myth (Habermas 1970). Indeed, this romantic myth can be criticised on good grounds. Feenberg (1996, 2002) accepts this critique, as do Alvesson and Willmott (1996).

What kind of conclusion can be drawn from that critique? Habermas argues that technology or technological reason as such implies *no* special social or political dimensions. By definition these aspects are excluded from technology *as such* because of its neutrality. So, for him, new forms of science and technology are impossible. However, as we saw, it can be argued that technological reason implies social and political aspects. Does this imply that we necessarily become a victim of the secret hope just mentioned and the romantic myth? I do not think so, as I will argue later on.

Habermas's critique of technology is inspired by Marcuse's notion of one-dimensionality; that is, the tendency toward a total administration in advanced societies. In his later works Habermas develops this concept into that of the "colonization thesis": the overextension of technical reasoning in society (Habermas 1984, 1987). This overextension implies the need to bind the technical reason in society to its proper place and to restore communicative action, which is about values and interests. In other words: Habermas criticised *technocratic* reason, not technological reason. As said, Alvesson and Willmott's view of critical theory seems to reflect Habermas's view of technology. In their description of the critical tradition, including Habermas, they speak of critique of *technocracy* (Alvesson and Willmott 1996, 77); critique of technology and technological reason as such is not mentioned at all. Ultimately, their critique of technocracy seems to be the "colonization thesis" of Habermas, as can be distilled from their conclusion concerning the critique of technocracy within critical theory.

> To sum op, when decisions are dominated by a technological interest in refining means, fundamental questions about politics and ethics are marginalized as ends are taken as given and the refinement of means becomes an end in itself. By making more visible the primacy of communicative action, Habermas' work problematizes the domination of technocracy as it highlights the practical rationality of the institutional framework as a resource for

> contesting processes of (technocratic) rationalization that are restricted to the realm of instrumental action. (Alvesson and Willmott 1996, 80)

I suggest that this Habermasian interpretation of critical theory may be responsible for the fact that (the philosophy of) technology is not a topic in the writings of Alvesson and Willmott. Indeed, they criticise the neutrality of technology, but not the neutrality of technology *as such* – only to the extent that technological reasoning is overextended in society. For instance, they criticise the idea of management represented as a technical activity. Then, a "blind eye is turned to the social relations through which managerial work is accomplished" (Alvesson and Willmott 1996, 10).

On several grounds it can be argued that a critical philosophy of technology is relevant for CMS. I give two reasons. First, technological reason plays an important role in the functioning of organisations. Accordingly, critical thinking about technology can lead to interesting insights in the functioning of technology and techniques within organisations; for instance, the insight that realisation of technological reason necessarily implies social and political choices, as Feenberg suggests. In Habermas's terms, the realisation of technological reason implies communicative action; the latter indeed can be suppressed. This can be taken to be an application of Habermas's colonisation thesis in a domain (technological reason) where, according to Habermas, there cannot be such an application at all.

Second, it is not unusual to represent organisations as instruments for making profit, and management as a technical activity (Alvesson and Willmott 1996; Morgan 1986; Scott 1998). Indeed, (commercial) organisations *are* designed purposefully, just as machines or technical instruments are. So, to a certain degree, technical reasoning seems to be justified. Habermas's colonisation thesis holds in situations where technological reasoning is overextended. But Habermas has nothing to say about situations where this reasoning *is* justified. A critical philosophy of technology is relevant in these situations: for instance, in showing how democratic action is possible within technological reasoning.

In this context, Feenberg's philosophy of technology proves relevant. In my view, his philosophy can help us to generate insights in aspects of the functioning of organisations that are hidden in current theories of management and organisation, but that remain hidden too in a Habermasian approach to (theories of) management and organisation. In the following sections I will try to make clear how this can be done.

To give an impression of the intrinsic link between "technology" or technique and social and political choices within organisations, I present a quotation from Mintzberg, in which this intrinsic relation between technological reasoning and these (perhaps implicit) choices becomes visible.

> Technique is not amoral [neutral] when its very nature drives organisations to a certain type of morality. Calculation is not neutral when some things are more easily calculated than others: costs more than benefits, tangible costs more than intangible costs, economic benefits more than social benefits. All of this can lead strictly professional managers [i.e. "rational" managers who consider the organisation as a "machine"] into all kinds of questionable behaviours. Economizing cuts the needs of the workers and the customers alongside the costs of production (for example by speeding up assembly lines beyond

> human capacity, or by eliminating experimentation on new products, which can also reduce the long-term economic viability of an organisation by eliminating investments such as research treated as costs). "Rational" accounting slips social costs off the ledgers by treating them as "externalities", which means that society has to foot the organisation's bills (for example, by calculating that unsafe gas tanks are cheaper than safe ones, or by letting the health care system pay for the mental breakdowns of the workers on those speeded-up assembly lines). Amorality thus becomes economic morality, and when pushed to the limit becomes social immorality. We end up with a one-dimensional society in which innocent people get run over by professional managers racing down the fast track, trampling whoever gets in the way of serving that almighty bottom line. (Mintzberg 1989, 362)

Two Types of Underdetermination

I choose the concept *underdetermination*[2] as my starting punt to clarify how Feenberg's philosophy of technology may be fruitful for critical thinking about (theories of) management and organisations. As we have seen, Feenberg criticises the philosophy of technology of the Frankfurt School and that of Heidegger and Ellul. In those philosophies, technology is not neutral; it involves taking a valuative stance. As was said, ultimately those critiques end up in a retreat from the technological sphere into art, religion or nature. Feenberg criticises the neutrality of technology too. But the result is not withdrawal. He chooses, as indicated, a third approach, which can be characterised as *design critique*: "Design critique holds that social interests or cultural values influence the realization of technological principles" (Feenberg 1996, 2). Now what does Feenberg mean?

For him, the thesis of underdetermination holds that – in the realm of technology – technical principles are insufficient by themselves to determine concrete designs or blueprints of technical artefacts. Often several different designs can achieve the same or similar objectives with no decisive technical reason to prefer one design over the others. In practice, however, the final decision between alternatives ultimately depends on the "fit" between them and the interests and beliefs of the dominant social group that influences the design process. For instance, the assembly line in factories reduces the autonomy and responsibility of employees within organisations. This can be interpreted in part as the realisation of interests of the owner or management of the factory. But is the assembly line the only way to realise production objectives? The answer is no. Of course, every concrete design of a production process presupposes the knowledge of natural laws of the material used. This knowledge can be transformed into technological principles. But if a concrete design implies an ordering of material parts, these technological principles are not sufficient to develop such a design. For instance, in reducing disturbances in production, choices have to be made about what parts are to be used, what kind of waste is accepted, and what kind of human contributions is desirable (degree of autonomy or responsibility of employees in producing). Only when these kinds of choices are made is a concrete design of a technical artefact possible.

As will be clear, those choices cannot be logically deduced from technological principles. On the other hand, the real functioning of a technical artefact is only possible

when these choices are made. In this sense every concrete design of a technical artefact is *underdetermined* by technological principles. I use the word "concrete" because of the fact that selections of special values or interests have to be made in developing a design of a technical artefact. A concrete design is socially embedded.

Feenberg is in agreement with Marcuse's idea that technological rationality is also social or political rationality (Marcuse 1964). Ideology is embodied in technology. As Feenberg notes:

> The dominant form of technological rationality is neither an ideology (a discursive expression of class interest), nor is it a neutral reflection of natural laws. Rather it stands at the intersection between ideology and technique where the two come together to control human beings and resources in conformity with what I will call "technical codes". A "technical code" is the realisation of an interest in a technically coherent solution of a general type of problem. (Feenberg 2002, 20)

So, critique of the technical code appears to be critique of the concrete design of technical artefacts. A concrete design implies – besides technological principles or rules – social, cultural or political aspects. Feenberg argues that these aspects are mostly hidden or repressed in discussions about technology. Good and efficient design is mostly represented as a specialised, rational, professional and a-political activity by an expert who aspires to offer the best solution for a given problem. This is what Feenberg calls the "technological hegemony". For him, this hegemony has to be contested. In this context he speaks of *subversive rationalisation*, a "rationalisation based on responsibility for the human and natural context of technological action" (Feenberg 1992, 3–4). In this rationalisation the technical code forms the key concept: it combines technological principles with chosen social interests and concerns for nature. Feenberg restricts the concept of underdetermination to what I will characterise as *social–cultural* underdetermination by technological principles. It is important to notice that this kind of underdetermination remains in the *conceptual* sphere: it expresses a relation between technological principles, chosen values or interests and a concrete (but conceptual!) design or technical code.

In my opinion there is another kind of underdetermination, which I characterise as *ontological*. This underdetermination expresses a relation between the conceptual sphere and reality. This kind of underdetermination is present in technology, but – as far as I can see – it gets little or no attention in the philosophy of technology.[3] A technical artefact can behave in an unforeseen manner, for example, on account of a high or critical temperature or as a consequence of a more or less unique and unforeseen interaction between its inner parts and the environment. In some cases this unforeseen behaviour can induce new technological research. But will this research ever come to an end? This seems improbable. The ever ongoing research activity may be interpreted as a sign of a material residuum in nature: the possibility that we will never succeed in interpreting all possible natural phenomena as consequences of natural laws. Thus, ultimately, nature is underdetermined by these laws. This implies that in the realm of technology a real technical artefact is *ontologically* underdetermined by its concrete design. Of course, a concrete technical product generally behaves in conformity with its concrete design. But in technological reasoning, unexpected events are mostly

interpreted as signs of the incompleteness or faultiness of a concrete design of a technical artefact. New technological research can result in a more sophisticated design. But will this guarantee that in the end no unforeseen occurrences of technical systems will take place anymore? I would say no, because concrete nature is underdetermined by natural laws, by the technological principles derived from them and by any concrete technical design of artefacts with its own technical code.

This ontological underdetermination can be linked to a theme in the tradition of critical theory. For Adorno, reality, life, nature, the individual, and so on, are richer than the intellectual or technological forms that try to grasp or control them (Adorno 1973). His "negative dialectics" is a kind of reflection in which rationality (in a broad sense) recognises the existence of nature that lies beyond its grasp. Ultimately, nature escapes (scientific) conceptualisation; its residuum is underdetermined by natural laws. As said earlier, this kind of underdetermination expresses a relation between the *conceptual* sphere (concrete design or technical code) and reality. In the philosophy of technology, this reality is that of nature; in the philosophy of management and organisation, this reality consists of real organisations. Feenberg does not use this application of the concept of underdetermination. As far as I can see, he does not notice ontological underdetermination of technical artefacts by their concrete design. But, as I will argue, elements of this underdetermination are present when he discusses the concept of "margin of maneuver".

Underdetermination in Classical Organisations

Social–Political Underdetermination

My analysis of *social–political* underdetermination of organisations by the principles of rules of organising exploits the analogy with Feenberg's analysis of underdetermination of concrete designs by technological rules. First I will justify this analogy. According to Etzioni (1964, 3), organisations are "social units (or human groupings) deliberately constructed and reconstructed to seek specific goals." As Shafritz and Ott (1987, 22) note:

> [Classical] organisations … should work like machines, using people, capital, and machines as their parts. Just as industrial engineers sought to design "the best" machines to keep factories productive, industrial and mechanical engineering-type thinking dominated theories about the "best way" to organize for production.

Saying that (commercial) organisations are designed for making profit is an insufficient principle or rule for designing them concretely. First, it must be decided in what way this end (making profit) is to be realised. Making cars or delivering specific services are examples of such decisions. Second, to be able to produce products or services, means have to be selected. This presupposes primarily knowledge of the means. Then this knowledge has to be transformed into general prescriptions of "how to do". Only then can a concrete design of a real organisation be developed. In this concrete design the means have to be ordered in a special way. This short description of organising (or "making") a classical organisation shows that there is a structural resemblance with the

making of technical artefacts. For me, this justifies interpreting the concept of underdetermination in the realm of organisations.

There are basic assumptions about principles of designing classical organisations within the theory of management and organisation. These are rooted in the industrial revolution of the 18th century and in the professions of mechanical and industrial engineering – some of which are:

1. Organisations exist to accomplish production-related and economic goals.
2. There is one best way to organise production, and that way can be found through systematic, scientific inquiry.
3. Organisations and employees act (or ought to act) "rationally".
4. Productivity is maximised through specialisation and division of labour, independent of wishes, motivation etc. of employees. (Scott 1998, 21)

In the classical organisation, employees are not viewed as individuals but as interchangeable parts in an "industrial machine", whose parts are – perhaps unfortunately – made of flesh and not of steel. Most workers do not have their own tools and have no special skills; they have to go looking for work in factories, where the equipment is. Organisational success is considered to be the result of well-organised production systems that keep machines busy and costs under control. Therefore, theories of classical organisations were primarily concerned with the anatomy or formal structure of organisations. One of the basic assumptions is maximising productivity by division of labour. But this division needs coordination of labour at the same time. Division of labour and coordination form organisational principles that can be compared with technological principles in technology.

How can we show that a concrete design of division and coordination implies social and political choices, which cannot be derived from the principles of division and coordination of labour themselves? In other words, in what sense is a concrete design socially–politically underdetermined by these principles? This can be made clear by looking at a concrete design of which these principles are constitutive: the design of an assembly line. The concrete design of a production process in the form of an assembly line implies a strategy of technologically enforced labour discipline, which forms the glue that holds together the elements from which it is composed (Feenberg 2002). This "enforced labour discipline" is not derived from the principles of division and coordination as such. It is a socially and ethically accepted (or enforced) form of controlling or manipulating labour by organisational engineers or managers.

The Dutch School of Socio-technical Design (van Amelsfoort and van Amelsfoort 2000; de Sitter 1997) suggests that the assembly line is not the only way in which efficient production can be realised. There are other ways in which the principles of division and coordination can be realised. This school consciously gives priority to autonomy and possibilities of self-organising of employees. Quality of labour is an integral part of the concrete design of a "socio-technical" organisation. Employees are organised in autonomous or self-directed work teams in which no simple routine labour occurs.

> A self-directed work team is a group of employees who share the responsibility for a whole task aimed at producing a product or service, supplied to either an internal or external customer. The team plans, regulates and monitors the progress of the whole task, solves day-to-day problems, and improves the overall process, without depending on the team leader or staff from service departments. (van Amelsfoort and van Amelsfoort 2000, 33)

This approach presupposes that an enhanced sense of engagement and responsibility on the part of the employees will result. Because assembly line productions reduce the autonomy and responsibility of employees within organisations, it is argued that the same or even better results of productivity are to be expected when the assembly line is replaced by another configuration of technological means, in such a way that the autonomy, involvement and responsibility of employees are guaranteed (van Amelsfoort 2000; Christis 1998; de Sitter 1997). Regulation of the labour situation (which combines the principles of division and coordination of labour), when taken to be the responsibility of the self directed-work team, contains a cycle of:

1) Setting the standards, objectives and norms,
2) Observing and measuring the present situation of the process, input and output,
3) Comparing (checking) the present situation with the desired situation (standards, norms and objectives),
4) Intervening in the process and environment to get the process on track. (van Amelsfoort and van Amelsfoort 2000, 15)

Accordingly, the design of an organisation in which the assembly line takes a central position is socially–politically underdetermined by the principles of division and coordination of labour. Of course power aspects are also involved, when redesigning such a kind of organisation, as is acknowledged by the Dutch School of Socio-technical Design.

> The preservative action of the classic structure and culture … can be seen as the main hindrance to organisation renewal.
>
> The introduction of self-directed work teams means a considerable change in the distribution of regulation capacity and a change in power sources. Power is redistributed in favour of the lower hierarchical levels. However, the major problem is that it … is seen as an attack on positions of power and authority. (van Amelsfoort and van Amelsfoort 2000, 80)

By definition, an organisation is goal oriented. For that reason, influencing employees to do some kind of tasks is necessary. In a classical organisation, the chosen way of influencing employees is that of command and control by management (i.e. formal authority). But is formal authority the only way people can be influenced? Certainly not: communicative reasoning directed to consensus is another way of exerting influence. For my argument it is important to notice that formal authority cannot be deduced, in one-to-one fashion, from this principle of design (i.e. the need to influence people). So, formal authority is underdetermined by the organisational principle of the need to influence people.

Because of the division of labour, coordination is necessary within every organisation for the realisation of its goal(s). Within classical organisations, *formalisation* is chosen to realise coordination. It is taken for granted that, through formalisation, the behaviour of employees can be determined. Scott (1998, 35) defines formalisation as follows:

> Recall that a structure is formalized to the extent that the rules governing behaviour are precisely and explicitly formulated and to the extent that roles and role relations are prescribed independently of the personal attributes and relations of individuals occupying positions in the structure. Formalization may be viewed as an attempt to make behaviour more predictable by standardizing and regulating it. … It is an attempt to make more explicit and visible the structure of relationships among a set of roles and the principles that govern behaviour in the system.

The concept of formalisation is underdetermined by the organisational principle of coordination. To choose formalisation as the way of coordination implies the choice of a machine model of coordination, which cannot be deduced from the principle of coordination itself. There are other ways to realise coordination. What kind of arguments can be given to choose formalisation as the best way to realise coordination?

> It enables participants or observers to diagram the social structures and the workflow, allowing them to depict these relationships and processes with the possibility of consciously manipulating them. (Scott 1998, 35)

So formalisation is a means by management to gain power over employees. Furthermore, by prestructuring differentiated role expectations, status battles within organisations will be reduced when a status structure emerges among employees (Bales 1953). Another argument is given by Merton (1957, 195), when he notes:

> formality facilitates the interaction of the occupants of offices despite their (possibly hostile) private attitudes toward one another.

Finally:

> The process of succession – the movement of individuals into and out of offices – can be routinized and regularized so that one appropriately trained person can replace another with minimal disturbance to the functioning of the organization. (Scott 1998, 37)

These arguments suggest how social or political elements play a part in the concrete design of coordination (as formalisation), which are not implied in the organisational principle of coordination (as such). Formalisation is underdetermined by the principle of coordination.

Ontological Underdetermination in Classical Organisations

In the technological sphere, this type of underdetermination states that the concrete design or blueprint of a technical artefact cannot (fully) determine the real behaviour of that artefact. As noted before, this kind of underdetermination, in the sphere of technology, seems to have been overlooked by Feenberg. But when Feenberg presents the

concept of "margin of maneuver", ontological underdetermination is at stake. For him, a concrete design of an organisation, a technical system of rules and procedures, is not just a plan in the heads of a few administrators. It is a real thing with its own properties, its own logic. But, as far as I can see, Feenberg does not take sufficient account of the distinction between the conceptual level (the concrete design and its own logic) and that of individual reality as such. True, Feenberg speaks about realisation: the realisation of a concrete design (with its technical code) in reality. But he seems to oversee that reality (nature itself, a concrete organisation, etc.) has its own ontological status, as will be discussed below.

As argued, when implementing, a transition from the conceptual level to reality occurs. In this transition, and in the designed reality, unforeseen properties or events can emerge. I think Feenberg has this in mind when he notes that the logic of reality can never be mastered by these administrators. Breakdowns and imperfections in the order of preconceived plans by the management will happen.

> The "weaker players", those whose lives at work are structured by the technical mediations selected by management, are constantly solicited to operate in this range of unpredictable effects. This kind of action is a form of "socially necessary freedom" generated in the technical system. (Feenberg 2002, 87)

In fact, there are two interrelated perspectives in interpreting ontological underdetermination by the concrete design. First, rules, regulations or structures (i.e. formalisation of behaviour of the classical organisation or its members) are insufficient for a total determination of the concrete behaviour of employees. This issue is mentioned by Feenberg in the concept of "margin of maneuver". Second, in the words of Feenberg, why are employees necessarily and constantly solicited to operate in a range of unpredictable effects? For me, this refers to an *ontological* question, which I will define as the "condition of human life". This condition of human life implies the contingency of human action as an ontological given (Arendt 1958). Whatever rules, regulations or structures for conduct are supposed to be followed, one may still predict that human beings will also show unpredictable or unstructured conduct. This issue I call the *ontological* underdetermination of human behaviour by rules, regulations or structures. For me, it is not because of the existence of rules that "socially necessary freedom" is generated, but this freedom is part of the human condition itself as an ontological qualification of human beings.

The ontological underdetermination by the concrete design of classical organisations can be interpreted as a fundamental criticism of the claim that organisations could function by complete conformity with that design; one can never hope to cope with "non-rational" aspects of or in organisations. The *social–political* underdetermination of organisations suggests that, in every concrete design of an organisation, social–political choices are necessary. As suggested, this underdetermination remains conceptual (design and choices are conceptual!). The *ontological* underdetermination of organisations pertains to the fact that whatever concrete design of an organisation is implemented, the organisation will have its own behaviour because of its individual existence (material, people, etc., which are always concrete-individual).

In *Management, A Contemporary Approach* (Keuning 1998, 264–266), a distinction is made between the formal organisation and the informal organisation. The *formal organisation* involves the division of tasks into an official framework established by management, complemented with job and task descriptions, guidelines and procedures, in conformity with the concrete design of that organisation. The formal organisation is conceived as maintaining itself by means of realising the power created by authority relations, structure, agreements, procedures, and so on, also in conformity with its concrete classical design. However, according to Keuning, there is a large and important area of activity in which the power of the formal organisation cannot be exploited. *Informal organisations* arise spontaneously and are always based on personal relationships and mutual interdependencies. But, for instance, in times of crisis, situations can occur in which informal aspects of an organisation will fulfil a more important role than the formal organisation. An informal leader can step forward and take control. It is striking that, although Keuning acknowledges this "large and important area of activity", no further attention is paid to that "area". In general, this informal aspect is often recognised in the classical theory of management and organisation. For instance, Selznick maintained that organisations consist of individuals whose goals and aspirations might not necessarily coincide with the formal goals of an organisation (Selznick 1949). They cannot be seen simply as a number of elements for management to control. March and Simon found that efforts to achieve organisational objectives resulted in unforeseen and dysfunctional consequences, because workers responded in personal ways to organisational stimuli (March and Simon 1958).

However, this informal conduct is not always dysfunctional. Employees can develop all kinds of informal and "illegal" routines in order to keep an organisational process running. Such informal solutions to real problems can be positive for the organisation, but they can have negative side-effects too; for instance, when workers start to accumulate a secret stash of spare parts in order to be able to continue working when parts come in too late. As a result, the production process will run smoothly, but the problem of late delivery of parts is not noticed and more capital than expected is tied up in parts. In my argument, *informal* organisation, as the margin of maneuvre, is a consequence of the ontological underdetermination of an organisation by its concrete design. This type of underdetermination defines possibilities for democratic (communicative) action throughout the entire organisation, and not only at the top.

Underdetermination in the Flexible Organisation

When market demands, technological environments, and so on, change quickly, organisations must have the adaptability to accommodate themselves to these changing factors. An organisation that is capable of these accommodations, I will call a *flexible* organisation. In flexible organisations the main issue that remains is the question of a rational structure. But, as was said, to be successful the appropriate concrete design of a flexible organisation must be permanently adapted to renewed demands.

> The organisation structure changes very frequently. Depending on the customer order, a temporary structure is developed. This also means that the formal job descriptions no longer exist. (van Amelsfoort and van Amelsfoort 2000, 29)

The appropriateness of organisations to their environment is the key to the so-called contingency approach in the theory of management and organisation (Lawrence and Lorsch 1967). This approach can be seen to be a consequence of the fact that organisations have to interact with their environments (society, clients, competitors, technological changes, etc.) in order to survive. Situations in which the environment changes rapidly require organisations to change their objectives regularly. As a consequence, the structure of the organisation has to be adapted to realise these objectives. This is why Burns and Stalker (1961) speak about an "organic" form or structure of organisations that is supportive of innovation (adaptation) to survive. In terms of system theory, in flexible organisations the capacity of self-regulation in an ever changing environment is consciously built in. They contain an institutionalised *meta-level* to solve survival problems. The concern of this meta-level is not primarily directed to production itself, but pertains to the *conditions* of production. The department of strategy and marketing research addresses the question of which products or services have to be produced. The department of organisational design is concerned with the question as to which structure is best, given these objectives. The department of personnel-policy has to solve the problem: how to get the right people at the right place at the right time (cf. Evans, Doz, and Laurent 1989; Keuning 1998).

Social–Political Underdetermination in Flexible Organisations

Within flexible organisations, in these preparatory and meta-level activities there is a lot of *social–political* underdetermination of concrete design by organisational principles. To get an impression of this kind of underdetermination, we can ask the following questions. For what purpose is a concrete scientific inquiry, as a basis for a new product or organisation design, undertaken? Is it about making cheaper products or services? Or making them more reliable or durable, and so forth? These purposes are underdetermined by scientific inquiry as such: research may support a lot of purposes. What new kind of technology will be acquired and how will it be implemented in the organisation? Does a chosen concrete design support "empowerment" of employees? Or will it contribute to reducing the autonomy of employees by deskilling them, by reducing tasks to routines that can be learned and controlled quickly? These choices cannot be deduced from technological principles or principles of organisation. For instance, advanced information technology can be applied to control employees in a way that was not possible before. But it can also be applied to enhance responsibility, autonomy and creativity of employees. These choices cannot be derived from technological principles alone: they are underdetermined by them.

The concept "personnel management" describes those activities that are necessary in the recruiting of a workforce, providing its members with payroll and benefits, and

administrating their work–life needs. In a flexible organisation, this workforce must be able to handle the more or less permanent changes of tasks. But this workforce is a whole of human beings, and not a machine consisting of parts. How can one be assured of the suitability of employees? The answer depends on a special concept of a human being. Do human beings inherit a dislike for work, and will they avoid it if they can, so that they must be controlled and threatened? Or is expenditure of physical and mental effort in work as natural as play or rest? Are human beings able to direct themselves and do they seek responsibility? Answers to such questions cannot be derived from the need as such of having suitable employees in organisations. These answers are underdetermined by this need. Yet, answers have to be given (even implicitly) to make concrete the concept of personnel management.

What will be the discourse of an intended organisational change or development? Again, is it about "imposing" a new concrete design on employees? Indeed, most theorists of management and organisation agree that setting performance standards, monitoring and controlling performance, and taking corrective action are major management functions (Draft and Fitzgerald 1992). The question is: should we only be talking about controlling employees? To what extent are employees prepared to be objectified by these control systems and, as a consequence, to be negated in their responsibility and autonomy? To what extent is management prepared for such an objectification of their employees? Are not reciprocity and accountability in communication and decision-making important values, which make employees and management embrace responsibility to engage in dialogue, to explain and to support organisational change? This kind of discourse is quite different from that of control, for it presupposes autonomous agents willing to discursively settle their differences and agree on common, worthwhile goals (Maguire 1999). The answers to this kind of questions determine, among other things, the development of a concrete design of organisational development. These choices are underdetermined by, for example, principles of economical needs for organisational change.

In addition, a general remark is in order. Most of the social or political choices just mentioned are embedded and petrified in what we called classical organisations. But in flexible organisations the structure of organisations has to be redesigned (in part) permanently. Hence, social–political choices have to be made permanently too. As a matter of principle, communicative actions seem to be more feasible in flexible organisations just because of the fact that in such organisations political choices have to be made almost permanently.

Ontological Underdetermination in Flexible Organisations

What has been said about ontological underdetermination within classical organisations can also be said about flexible organisations, and therefore will not be repeated here. What has been said about formalisation, informal organisation and "margin of maneuver" applies to flexible organisations as well. But there is another item that is connected with the general remark at the end of the previous section. You can change concrete designs of an organisation on a more or less permanent basis, but how about

realising them? How do you know beforehand how employees will react to changes in design? This question is partly reflected in the concern for "human resource management". Employee tasks are no longer to be defined by some simple routine of tasks because tasks change as the organisation changes. Employees have to be prepared for organisational changes. This is one of the reasons why learning within organisations became an important issue for human resource management and organisational design.

Flexible organisations are more dependent on the ways employees interpret and fulfil tasks that are new. In the classical organisation, job descriptions are as "closed" as possible; every ambiguity in these descriptions must be excluded and a long-term application is intended in developing them. In this way one hopes to secure organisational stability and predictability. Employees can be replaced rather easily, and possibly short courses are necessary to "learn the trick". No further learning is needed. In flexible organisations, job descriptions are usually more open because jobs must be easily adapted to changing organisational tasks. But when these job descriptions are more open, the way tasks are fulfilled is more difficult to predict. There is of course more room for novel interpretations of the job description and novel fulfilment of tasks by employees. The ontological underdetermination of task fulfilment by job descriptions is increased. This implies in principle that more democratic actions are possible in flexible organisations. On the other hand, this possibility may result in a progressive organisational uncertainty in realising organisational purposes. To reduce these uncertainties there seem to be two possible strategies. The first is a kind of backsliding: an increase of organisational formalisation and/or development of detailed job description. There seem to be considerable risks in doing that: organisational inflexibility may result. Another possible risk is that management succumbs to the hope of greater control and predictability, which in fact only exists on paper. The second strategy is more indirect, namely trying to influence organisational culture or business education (Schein 1999). In these cases this strategy is (in part) focused on values. When it becomes difficult to influence employees from the "outside" (i.e. by way of formalisation, etc.), one tries to influence them from the "inside": through the tuning of values, attitudes, responsibilities of employees on the one hand, and the interests of organisations (or their management) on the other. The risk of this approach is that values or culture become instrumentalised. Just as an organisational structure is an instrument for an efficient organisation, values or culture become instruments. Just as an organisational structure is designed, so also a desired culture or set of values is designed. But, then, ontological underdetermination will recur: a concretely espoused culture and experienced values are underdetermined by a consciously designed culture and consciously selected values.

Underdetermination and the Knowledge-intensive Organisation

Recently, theorists or consultants about management and organisation point to *non-design* elements[4] in the functioning of organisations. The reason for this is the knowledge-intensive aspect necessary for producing adequate services or goods, such as consultancy or producing computer software. In principle, it is possible that only one

employee in an organisation is able to solve a problem of a client, because of the required specialised knowledge. These consultants and theorists express non-design elements under different headings, depending on their approach; for instance, autonomy, creativity, empowerment, self-organisation, responsibility, idiosyncratic knowledge, flexibility, cooperation, networking, commitment, and so on.[5] In my opinion these elements cannot be designed – just because when you try to design them, the phenomenon in question disappears. When trying to design creativity (i.e. designing the result of creativity and its processes), creativity as such evaporates. Trying to design autonomy implies negation of the autonomy. This implies that the relevance of *social–political* underdetermination by concrete designs of organisations is diminished in knowledge-intensive organisations. To the extent that less or no concrete designs of organisational activities are possible, this kind of underdetermination of these activities as a concept "disappears".

Why do these authors emphasise non-design elements? It is argued that applying "traditional" principles of designing organisations (i.e. hierarchy, a high division of labour, separation of planning and execution, detailed job descriptions) makes it impossible for employees to do their tasks in an appropriate (creative, autonomous, innovative etc.) way. Therefore, impeding structures must be eliminated; the classical way of organising does not work any more. This view is exemplified by Eccles, Nohria, and Berkley (1992). For them, recognising the identity of a person (employee) and realising the implications of this identity for what that person wants to do are the key to creating a context in which the right kind of action can occur. As a consequence the main task of management is, according to Eccles et al., not to design and control an organisation, but to interact with people working in organisations to look for matches between people's aims, knowledge and motives, and the interests of the organisation. The basic task of management is to mobilise actions by using language creatively to appeal to the identities of employees. When this "mobilisation" has taken place, a mutual promise, agreement or even contract can or will result: the promise by the manager to make possible the mobilised and agreed actions of employees,[6] and the promise by employees to commit themselves to achieve the result of these mobilised actions.[7]

As knowledge-intensive organisations become effective, possibilities for communicative actions by their employees seem to increase dramatically. As already argued, the meaning of the formal aspect of the organisation is deflated. The "informal" organisation becomes dominant. The significance of what I called the *ontological* underdetermination of organisations by their concrete design is dramatically increased. Or, taken in reverse, as far as a concrete design of organisational activities is no longer possible, the ontological underdetermination itself disappears. As work requires creativity, a great deal of work has to be organised "informally" by the employee himself/herself. The boss becomes a coach, and workers are becoming "entrepreneurs" in the organisation, and so on. The organisation has to offer them opportunities to act freely, to use their abilities and to acquire knowledge. Management – that is, its function – is not to be isolated and should not be practised by a separate group within organisations to the extent that they are knowledge intensive. In (the theory of) knowledge-intensive organisations, many traditional conceptions of management seem to be almost irrelevant.

Management as such appears to become: facilitating employees and their cooperation, and "boundary management" – that is, laying down and monitoring financial boundaries and prerequisites of organisational actions such that the continuity of the organisation is not endangered (van Diest 1997).

In more traditional ways of analysing organisations (classical or flexible organisations), the fact that employees are highly replaceable constitutes an important condition of management's power over the employees. As a cog in a system, an employee can – when "malfunctioning" – be replaced rather easily. Formal authority is a sufficient condition for doing this. However, as organisations become more knowledge intensive, this condition cannot be fulfilled. A kind of irreplaceability is the result of possibly uniquely required knowledge, contacts and relationships "owned" by the employees to realise organisational goals. This "production factor" (knowledge) is more or less inalienable, not to be taken away from employees. This inalienability constitutes a possibility for democratic actions by employees. Consequently, a great deal of work cannot be organised or determined by the management or the concrete design of the organisation. This work is almost completely underdetermined by such a design. Only some general rules or guidelines can be given; and an adequate infrastructure – such as a computer infrastructure and databases – can be "organised" or "designed". But the productive activity *itself*, such as generating the required knowledge, formulating creative solutions, and communication with clients, cannot be organised in the same way as working on an assembly line. "Self-organisation" by employees is inherently necessary; this fact also constitutes a possibility for democratic action.

Finally, in the case of knowledge-intensive work, organisational investments are required to heighten the *empowerment* of employees. By creating a computer infrastructure or by giving employees the opportunity to acquire knowledge, the result aimed at is that they will become more professional. Management can only hope that these kinds of investments result in a better performance of the company. However, this investment is lost when the employee leaves the organisation. For me, the other side of this development seems to be that organisational investments for heightening the "empowerment" of employees strengthen possibilities for democratic actions of these employees within organisations. Who decides the needs of investment in knowledge workers? As they cannot (always) be defined by management, for instance on account of the uniqueness of the tasks to be done, the employee must be able to influence or make that decision. As a consequence, the employee can consider other interests than the organisation's proper functioning. So, the results of these investments are to a high degree underdetermined by the purpose (i.e. better performance of the company) of management. A training course towards becoming more assertive to clients or suppliers can or will result in a greater personal independence of the employee. The organisational interest regarding this training will be: to enjoy better negotiations with clients or suppliers. But the employee can "use" his/her increased independence to enjoy better negotiations with management regarding working conditions; for instance, to protect himself or herself from a constant and exhausting pressure to think of something new, or to protect a clear boundary between life at work and life at home.

Conclusion

In this article I show a diversity of possibilities of democratic actions by employees within organisations. We live in democratic societies. But organisations in these societies can show anti-democratic, perhaps even totalitarian characteristics. This article tries to give an impression of how democratic actions by employees in designing, managing and functioning of organisations are possible, just because of the *technological* approach in *designing* organisations. These possibilities are the consequence of the types of underdetermination of organisational functioning by its concrete designs as discussed above. Furthermore, to the extent that organisations become more knowledge intensive – as can be expected in the western world – possibilities for such action seem to increase and even become necessary (implicitly or explicitly). Of course, the *fact alone* of the (necessary) existence of these possibilities to act does not imply that employees are aware of them. But to a certain degree employees cannot help exercising their faculty to act (Arendt 1958). Being aware of these possibilities of employees to act can/may help to democratise organisations.

The position taken in this article is discussed within the tradition of critical theory in general, and CMS more specifically. Dependent upon the view of technology, critical philosophy of technology can help us in getting special "critical insights" in the theory and functioning of organisations, such as insights in the possibilities of democratic action by employees within organisations. When considering technology only as instrumental, as – in my opinion – Habermas does, this restriction will result in failure to observe these possibilities of democratic actions by employees.

Notes

[1] See online (http://en.wikipedia.org/wiki/Critical_management_studies).

[2] There are other concepts or theories developed by Feenberg, such as those of "primary and secondary instrumentalization" and "operational autonomy". They are related to the concept of underdetermination, but in this article I pay no attention to these relations.

[3] In the philosophy of science, underdetermination is well known in the form of the Duhem–Quine thesis (Ariew 1984). This thesis asserts that any empirical evaluation of a theory is in fact a composite test of several interconnected hypotheses. Recalcitrant evidence signals falsity within the conjunction of hypotheses, but logic alone cannot pinpoint the individual element(s) inside the theoretical cluster responsible for a false prediction. The thesis refers to the inevitable lack of logically compelling reasons for preferring one competing scientific theory to another (Feenberg 1995).

[4] I use the term "non-design elements" because these elements escape most of the categories of a (concrete) design, as I will argue.

[5] See Peters (1988), Clegg, Kornberger, and Pitsis (2006), Cloke and Goldsmith (2003), Senge (1990), Eccles, Nohria, and Berkley (1992), Handy (1994), Beer and Nohria (2000), Schein (1999), Hatch (1997), Naisbitt (1994), Vaill (1989) and Waterman (1990).

[6] For instance, to make available a computer infrastructure, authorisation to define one's own goals for learning, authorisation to appoint project contributors, disposition of a budget, and so on.

[7] It is clear that such a match between personal aims and organisational goals is not guaranteed. My point is that, in principle, the possibilities of democratic actions by employees are greater when the organisation is knowledge intensive.

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